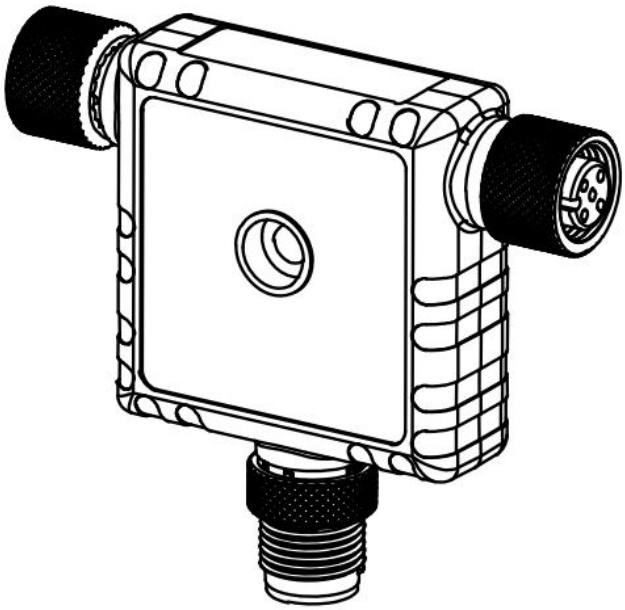

BANNER R45C-2K-MQ IO-Link Master/Modbus Converter User Guide

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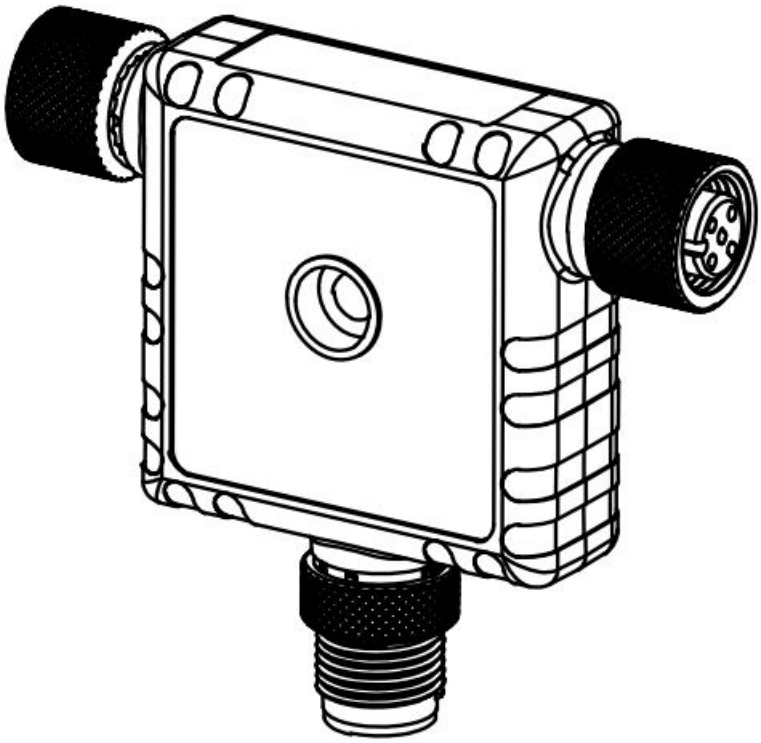


This guide is designed to help you set up and install the R45C-2K-MQ IO-Link Master/Modbus Converter. For complete information on programming, performance, troubleshooting, dimensions, and accessories, please refer to the Instruction Manual at **www.bannerengineering.com**. Search for p/n 220214 to view the Instruction Manual. Use of this document assumes familiarity with pertinent industry standards and practices.

- Connects two IO-Link devices and provides access via Modbus RTU interface
- Rugged design; easy installation with no assembly or individual wiring required
- 5-pin M12 male quick disconnect connector
- Two 4-pin M12 female quick disconnect connectors
- Built-in indication for two IO-Link master ports
- Built-in indication for Modbus RTU connection status
- Rugged over-molded design meets IP65, IP67, and IP68

Overview

The R45C 2-Port Converter connects to two IO-Link devices and provides access to IO-Link data and functionality via a Modbus RTU connection. Modbus registers allow for access to both IO-Link devices and their functions:

- Process Data In
- Process Data Out
- Connected device information
- ISDU data
- Discrete I/O configuration
- IO-Link events
- Data storage
- SIO mode

For more information, see p/n 221399 IO-Link to ModBus Converter – Device Register Map.

Status Indicators

The R45C-2K-MQ IO-Link Master/Modbus Converter has matching RGB LED indicators on both sides for each IO-Link device port to allow for installation needs and still provide adequate indication visibility. There is also an Amber LED indicator on both sides of the converter, which is specific to the Modbus communication.

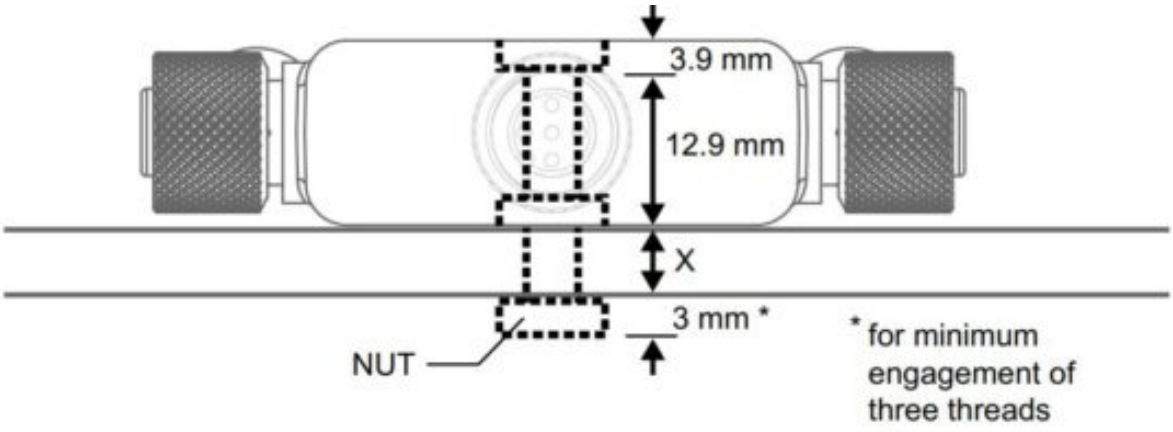
IO-Link Device Port 1 and Port 2 RGB LEDs	
Indication	**Status**
Off	Deactivated port
Flashing Green	Waiting for IO-Link device
Solid Green	IO-Link device is connected
Flashing Red	Validation Error
Solid Yellow	Signal high in SIO-mode
Solid Blue	Processor communication error

Modbus Communication Amber LED	
Indication	**Status**
Flashing Amber (4 Hz)	Modbus communications are active
Solid Amber (2 seconds) to Off	Modbus communications are lost after connection
Solid Amber (2 seconds) to Flashing Amber (4 Hz)	Modbus communications momentarily lost, but then reestablished
Solid Amber	Modbus communications are intermittent, or communications error occurs more frequently once every 2 seconds
Off	Modbus communications are not present

Mechanical Installation

Install the R45C 2-Port Converter to allow access for functional checks, maintenance, and service or replacement.

All mounting hardware is supplied by the user. Fasteners must be of sufficient strength to guard against breakage. Use of permanent fasteners or locking hardware is recommended to prevent the loosening or displacement of the device. The mounting hole (4.5 mm) in the R45C 2-Port Converter accepts M4 (#8) hardware. See the figure below to help in determining the minimum screw length.



Screw Length (with screw head fitting in counterbore) = 12.9 mm + “X” mm + 3 mm

CAUTION: Do not over tighten the R45C 2-Port Converter’s mounting screw during installation. Over tightening can affect the performance of the R45C 2-Port Converter.

Specifications

- **Voltage Input Range**

  18 V DC to 30 V DC
- **Input Power**

  24 V DC at 4A
- **Output Power**

  24 V DC at 50 mA + 200 mA/port = 450 mA maximum
- **Supply Protection Circuitry**

  Protected against reverse polarity and transient voltages
- **Leakage Current Immunity**

  400 µA
- **Indicators**

  RGB1: IO-Link Port 1 Status

  RGB2: IO-Link Port 2 Status

  Amber: Modbus Communications

Connections
(2) Integral 4-pin M12 female quick disconnect
(1) Integral 5-pin M12 male quick-disconnect connector

Construction
Coupling Material: Nickel-plated brass
Connector Body: PVC translucent black

Vibration and Mechanical Shock
Meets IEC 60068-2-6 requirements (Vibration: 10 Hz to 55 Hz, 1.0 mm amplitude, 5 minutes sweep, 30 minutes dwell)
Meets IEC 60068-2-27 requirements (Shock: 30G 11 ms duration, half sine wave)

- Environmental Ratings

  For Indoor Use Only

  IP65, IP67, IP68, UL Type 1
- Operating Conditions

  –40 °C to +70 °C (–40 °F to +158 °F)

  90% at +70 °C maximum relative humidity (non-condensing)

  Storage Temperature: –40 °C to +80 °C (–40 °F to +176 °F)
- IO-Link Baud Rates

  COM1: 4.8 kbps

  COM2: 38.4 kbps

  COM3: 230.4 kbps
- **Compliant Standards**

  IO-Link interface and System Specification v 1.1.2

  IO-Link Test Specification v 1.1.2
- **Master Communication Protocol**

  RS485 – Modbus RTU
- **Digital Inputs (SIO [DI] Mode)**

  Input Current: 5 mA typical

  ON Voltage/Current: 15 V DC minimum/5 mA minimum

  OFF Voltage: 5 V DC maximum
- **Digital Outputs (SIO [DO] Mode)**

  On-Resistance: 120 mΩ typical, 250 mΩ maximum

  Current Limit: 0.7 A minimum, 1.0 A typical, 1.3 A maximum

  Off Leakage Current: -10 µA minimum, 10 µA maximum
- **Certifications**

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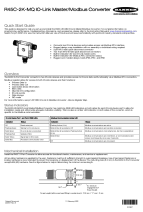	**BANNER R45C-2K-MQ IO-Link Master/Modbus Converter** [pdf] User Guide R45C-2K-MQ, IO-Link Master Converter, IO-Link Modbus Converter

References

- Banner Engineering
- Patents